

McCONNELL'S MILL BRIDGE

Pennsylvania Historic Bridges Recording Project  
Spanning Slippery Rock Creek at Township Rt. 415  
Ellwood City vic.  
Lawrence County  
Pennsylvania

HAER No. PA-458

HAER  
PA  
37-ELLCI.V,  
1-

PHOTOGRAPHS

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WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD

National Park Service

1849 C Street, NW

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HISTORIC AMERICAN ENGINEERING RECORD

McCONNELL'S MILL BRIDGE

HAER No. PA-458

HAER  
PA  
37-ELLCI.1  
1-6

Location: Spanning Slippery Rock Creek at McConnell's Mill Rd.  
(Township Rt. 415), Ellwood City vicinity, Lawrence County,  
Pennsylvania.

USGS Quadrangle: Portersville, Pennsylvania (7.5-minute series, 1979).

UTM Coordinates: 17/569820/4533650

Date of Construction: 1875.

Designer: Unknown.

Builder: Bell and Breckenridge, substructure; J. B. White and Sons,  
superstructure.

Present Owner: Lawrence County.

Present Use: Vehicular bridge.

Significance: This is one of four extant Howe-truss covered bridges in the state  
of Pennsylvania. At 91'-0", it is the longest of these that has not  
been completely rebuilt. Erected originally to transport cargo from  
a grist mill, the bridge still carries vehicular traffic through what  
became McConnell's Mill State Park in 1957. In the late 1950s, a  
steel support structure was added to the deck and an asphalt  
covering was tacked onto the roof. The Howe truss, roof beams,  
and siding retain their original condition. McConnell's Mill  
Bridge was listed in the National Register of Historic Places in  
1980.

Historian: J. Philip Gruen, August 1997.

Project Information: This bridge was documented by the Historic American  
Engineering Record (HAER) as part of the Pennsylvania Historic  
Bridges Recording Project - 1, co-sponsored by the Pennsylvania  
Department of Transportation (PennDOT) and the Pennsylvania  
Historical and Museum Commission during the summer of 1997.  
The project was supervised by Eric DeLony, Chief of HAER.

Covered bridges have forever held a special place in the hearts and minds of many Americans. This long-standing fascination is difficult to place, but these bridges are often noted for their aesthetic appeal. Attention given to covered bridges is marked by the growth of societies dedicated to their preservation in the Midwest, mid-Atlantic and the Northeast in the late 1950s and throughout the 1960s. More recently, Robert James Waller's national best-seller, *The Bridges of Madison County*, focuses on their picturesque aspects.<sup>1</sup>

The covered bridge located in McConnell's Mill State Park in Lawrence County, Pennsylvania, is a bridge that has considerable aesthetic appeal, in part because of its surroundings. Nestled in a magnificent gorge surrounded by foliage and next to an old grist mill that gives the area — and the bridge — its name, the McConnell's Mill Bridge, completed in 1875, seems the epitome of the traditional American covered bridge. Rising from stone abutments over Slippery Rock Creek, its red-painted board-and-batten exterior gives the bridge the semblance of a barn over a river, allowing it to shed its associations with engineering and technology and enter the realm of architecture.

Perhaps less significant to the American imagination, but of vast significance in the history of American engineering, technology, and transportation, wooden covered bridges — more than simply providing aesthetic appeal — once provided many of the first solid crossings over major American rivers. Their coverings were built to prevent the wooden trusses from inclement weather and rot, extending their useful life indefinitely, depending upon maintenance. Their widespread construction marked the beginning of the end for the ferry as a principal means of transport across rivers, and it is believed that nearly 1,500 of them were built in Pennsylvania during the nineteenth century — far more than any other state.<sup>2</sup> It is also believed that wooden covered bridges were first built on a widespread scale in America, and it is known that the truss

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<sup>1</sup> Although Waller's book may be responsible for the heightened attachment of aesthetic associations with covered bridges in recent years, some of the earlier covered bridge societies were also founded in part because of the picturesque nature of the bridges. The Theodore Burr Covered Bridge Society of Pennsylvania, founded in 1950, was established in part to see that "the fine old structures are properly cherished." See "Pennsylvania — Land of Covered Bridges," *Penn Rambles* vol. 3-4 (Jul.-Aug. 1964), vertical files, Pennsylvania Room, Free Library of Philadelphia, Philadelphia, Pa. In an article about the Theodore Burr Covered Bridge Society, printed in the *Harrisburg Patriot* newspaper in the late 1950s, a columnist argued that the society was interested in the preservation of covered bridges because they were "definitely" bridges, as opposed to a modern (presumably prestressed concrete) bridge, which was a "non-bridge" and resembled "a highway suspended over water." See Paul B. Beers, "Reporter at Large," *Harrisburg Patriot*. Both: vertical files, State Library of Pennsylvania, Harrisburg, Pa.

<sup>2</sup> Benjamin D. Evans and June R. Evans, *Pennsylvania's Covered Bridges: A Complete Guide* (Pittsburgh: Univ. of Pittsburgh Press, 1993), 4. Today, a reported 217 covered bridges remain in Pennsylvania, still the most of any state. This large number of covered bridges contributed to the establishment of "See Pennsylvania Covered Bridges Week," signed into state law on 9 May 1969 by Governor Raymond P. Shafer. Pennsylvania is currently the only American state to recognize its covered bridges through legislative decree.

designs patented by American engineers like Theodore Burr, Ithiel Town, Stephen H. Long, Robert J. Smith, and William Howe influenced the course of bridge-building worldwide.<sup>3</sup>

A variety of different truss systems were used for covered bridges during the late eighteenth century and throughout the nineteenth, as bridge technology improved to allow for longer spans that could withstand heavier loads. One such system was patented by William Howe in 1840, combining a variation of a regular king-post truss with diagonal wooden members acting in compression and vertical iron rods acting in tension.

The McConnell's Mill Bridge was one of many covered bridges built in Pennsylvania with a Howe truss; today, only four remain.<sup>4</sup> Its 91'-0" length makes it the longest of the four remaining Howe truss bridges in Pennsylvania, and it is also the oldest of the four with most of its original members intact. Much of the 120-year-old structure is still in remarkably good condition for its age — its only substantial alterations are a steel truss supporting the wooden deck and asphalt roofing paper that was attached to the roof beams in the late 1950s. These additions, however, have allowed the bridge to provide continuous vehicular service.

That the state considered the McConnell's Mill Bridge worthy of structural rehabilitation rather than replacement with a new bridge — which has been the case with many covered bridges in Pennsylvania and elsewhere — testifies to its importance as representative of early American bridge engineering, its role in the economic history and growth of its region, and to the apparent need to preserve the visual appeal it contributes to its setting.

While the McConnell's Mill Bridge no longer serves its early economic function as a passageway over the creek for the distribution of flour produced by the mill, it is a principal attraction in the state park. Since the mill was transformed into a museum in the 1960s, many of those who come to visit the mill combine their trip with a walk through the bridge. Many also take photographs either of the bridge alone or of friends and family using the bridge as a backdrop. Its significance in the history of American engineering notwithstanding, the small bridge continues to attract attention for its aesthetic appeal.<sup>5</sup> But like most other American

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<sup>3</sup> Despite the myths, covered bridges are not unique to America, nor were they invented here. There is evidence of covered bridge construction in eighteenth-century Europe, and Italian architect Andrea Palladio had developed the technology as early as the sixteenth century. See Donald C. Jackson, *Great American Bridges and Dams* (New York: John Wiley & Sons, Inc., 1988), 20.

<sup>4</sup> The number of Pennsylvania covered bridges once built with a Howe truss is unknown. Besides the McConnell's Mill Bridge in Lawrence County, Pennsylvania's other extant Howe truss covered bridges include the Thomas Mill Bridge in Philadelphia County (1855, rebuilt 1939), the Kintersburg Bridge in Indiana County (1877), and the Shade Gap Bridge in Huntingdon County (1889). For more about the Thomas Mill Bridge, see U.S. Department of the Interior, Historic American Buildings Survey (HABS) No. PA-19, "Covered Bridge," 1972, Prints and Photographs Division, Library of Congress, Washington, D.C. Evans and Evans, in *Pennsylvania's Covered Bridges*, 46, list a fifth Howe truss bridge in Ralph Stover State Park along State Route 1009 in Bucks County. That bridge has only its pony trusses covered, and is therefore not a covered through truss bridge.

<sup>5</sup> The bridge has been featured over the years in publications and postcards, including one "Greetings From Pennsylvania" postcard which also includes images of Independence Hall, the state capitol building, and Frank

covered bridges, the McConnell's Mill Bridge is significant for reasons of both aesthetic and engineering consideration.

### Early American Covered Bridges

Aesthetic considerations, however, were not the principal motivations for the early builders of wooden covered bridges, although they often gave the bridges decorative touches such as ornamental portals. And despite the conventional impression of covered bridges as small spans over little creeks, many early covered bridges were quite large. Faced with the daunting task of providing the nation's first crossings over huge bodies of water, many early ambitious bridge builders pushed the technology as far as it would go, creating dramatic and lengthy spans, such as Timothy Palmer's 1806 three-span, 495'-0" "Permanent Bridge" over the Schuylkill River in Philadelphia or Theodore Burr's 1817, twelve-span, 2,520'-0" Camelback Bridge over the Susquehanna in Harrisburg.

Many of these early covered bridges applied the arched truss system patented by Theodore Burr in 1804, which employed wooden arches to reinforce king-post trusses. Other bridges were built using the patent established by Ithiel Town in 1820 for a latticed truss made of numerous intersecting wooden diagonals.

### The Howe Truss

With iron becoming acceptable as a bridge-building material by the 1850s, Massachusetts-born William Howe patented a double-intersection truss in 1840 that employed wrought-iron rods as vertical tension members between wooden diagonals. Howe's brother-in-law, real-estate speculator Amasa Stone, promoted use of the Howe truss in his native Ohio and patented a form of it that became a standard in 1846. This form traditionally included heavy wooden members with the exception of transverse beams, vertical end posts, the top and bottom chords, and the bolted connections. Howe and Stone's truss patent improved upon the design patented by Stephen Harriman Long in 1839, which included diagonals pre-tensioned by driving wedges on the vertical members. Howe's truss made Long's obsolete by devising a method to pre-stress diagonals by tightening nuts rather than driving wedges.<sup>6</sup> There were variations on the truss, one of which adds a second wooden diagonal to each panel. The McConnell's Mill Bridge employs this crossed-diagonal system.

In 1841 and 1842, Stone formed a company with Azariah Boody to promote and fabricate Howe trusses. Because the iron rods and the wooden compression members could be standardized, by the mid-nineteenth century the Howe truss had become the nation's most

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Lloyd Wright's Fallingwater. See Thomas Walczak, President, Theodore Burr Covered Bridge Society, postcard collection, New Castle, Pa.

<sup>6</sup> Dario A. Gasparini and David Simmons, "American Truss Bridge Connections in the Nineteenth Century, I: 1829-1850," *ASCE Journal of Performance of Constructed Facilities* 11, No. 3 (Aug. 1997): 6-7.

popular truss for railroad bridge construction.<sup>7</sup> The Howe truss's successful use of iron tension rods, at an early stage, gave bridge builders confidence in the strength and applicability of that material.

For a time, bridge engineers building Howe trusses combined wooden beams with cast- and wrought-iron members. As the railroads continued to demand sturdier bridges, however, it was not long before all-iron bridges, followed by statically determinate all-steel prefabricated truss bridges, were spanning America's waterways. The introduction of iron members into bridge construction was later seen as a crucial moment in bridge engineering history, the gradual end of wooden bridges and the introduction of all-metal bridges that came to dominate American bridge building in the late nineteenth century.

Wooden members had become nearly extinct around the country by the early twentieth century, but in the 1870s, Howe truss bridges were still very popular for both railroad and vehicular bridge construction.<sup>8</sup> While the Burr arch-truss remained the most popular mode of construction for the small wooden covered bridges over streams, creeks, and rivers in America's rural areas, in the mid- and late-nineteenth century a sizable number of covered bridges were built with Howe trusses. Most of the Howe truss covered bridges, however, were built in Ohio, Indiana, and Oregon; only a comparative handful were built in the eastern United States. Although Pennsylvania has always had far more covered bridges than any other state, only four Howe truss covered roadway bridges are known to have existed in the state at any one time.<sup>9</sup>

### **Lawrence County and McConnell's Mill**

In Lawrence County, despite its important role in the once-vibrant lumber industry of northwestern Pennsylvania, bridge building moved quickly from simple log "stringer" bridges to spans of iron and steel. The "age" of covered bridge building, from 1820 to 1900 (when Pennsylvania is estimated to have had approximately 1,500 covered bridges), went by relatively unnoticed in the watershed of the Ohio River, which includes nearly all of western

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<sup>7</sup> Gasparini and Simmons, "American Truss Bridge Connections," 10-1. In the western United States, where iron was more expensive, wood was also used for the vertical end posts.

<sup>8</sup> In an article about the development of the American railroad published in 1904, an author noted that the American railroad industry would not have progressed through the nineteenth century without the availability of wood and "the invention of that most admirable form of framed bridge known as the Howe truss." See *Scientific American Supplement* 57, No. 1479 (7 May 1904), vertical files, Pennsylvania State Library, Harrisburg, Pa.

<sup>9</sup> In 1989, 130 Howe truss covered bridges remained in the United States. Ninety of these were in Ohio, Indiana, and Oregon. An unusually large number of Howe truss covered bridges were also built in New Brunswick, Canada. These figures do not include boxed pony truss bridges using the Howe system. Figures tabulated by author from Bill Helsel, ed., *35th Anniversary World Guide to Covered Bridges* (National Society for the Preservation of Covered Bridges, Inc., 1989).

Pennsylvania.<sup>10</sup> Of the covered bridges that were built, however, many of them were erected in Lawrence County, and there is evidence that at least seventeen of them existed in the county at one time or another.<sup>11</sup> Today, only McConnell's Mill Bridge and Banks Bridge, the latter an 1889 Burr arch-truss over Neshannock Creek in Wilmington Township, still exist.

The manner in which the trussing system of the McConnell's Mill Bridge developed and how it fits in with the history of American bridge building provides only part of the story, however. A bridge at this location would probably never have been built at all had not McConnell's Mill been there in the first place. Indeed, the story of the bridge was — and continues to be — linked to the mill that later gave its name not only to the bridge, but also to the state park around it.

The mill, however, was neither the first mill at the site, nor was it originally owned by a McConnell. In fact, there were mills, dams, and bridges along Slippery Rock Creek in the vicinity of the current McConnell's Mill as early as 1825. The first mill on the site, a four-and-a-half-story structure, was built by Daniel Kennedy in 1852, whose descendants had settled in the region in 1808. The mill made use of a dam built earlier by Johnson Knight to power one of his many mills.<sup>12</sup>

In 1867 or 1868, Kennedy's Mill was struck by lightning and burned to the ground. Only some of the foundation stones remained, but Kennedy paid for the reconstruction of the mill (with one less story) on that foundation, and it was operating again by 1869 or 1870. In 1874, the dam at the site was washed away, and a 12'-6" dam was erected in its place.

What was later called the McConnell's Mill Bridge was not the first bridge at the site, either. In December 1861, viewers inspected and approved a county-built bridge over Slippery Rock Creek "where the public road to Butler crosses said creek," noting that Andrew Buchanan and James McKee had fulfilled the contract to build the bridge and that it had been completed in a "substantial and workmanlike manner."<sup>13</sup>

Kennedy passed away on 14 June 1872, shortly after building his second mill, and it was purchased by three men named Mehard, Oliver, and Graham. In May 1875, James F.

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<sup>10</sup> The Ohio River watershed is defined as that Pennsylvania land drained by the Ohio River, the Allegheny River, and the Monongahela River, in addition to their major and minor tributaries. See Richard Sanders Allen, *Covered Bridges of the Middle Atlantic States* (Brattleboro, Vt.: Stephen Greene Press, 1959), 73.

<sup>11</sup> Tom Walczak, president of the Theodore Burr Covered Bridge Society of Pennsylvania, personal communication, 7 Aug. 1997. Mr. Walczak has postcards of thirteen of these bridges in his personal collection. Three of them spanned Slippery Rock Creek, not far from McConnell's Mill.

<sup>12</sup> Apparently, Knight built two dams in addition to a grist mill, saw mill, carding mill, and oil mill along Slippery Rock Creek.

<sup>13</sup> Lawrence County, Pennsylvania, *Road Docket* (Lawrence County Courthouse, New Castle, Pa.), Nov. 1861.

McConnell, Thomas McConnell, and Samuel Wilson bought the mill property.<sup>14</sup> As ownership of the mill was being transferred to McConnell, Wilson, and Company, workers were putting finishing touches on the nearby covered bridge. The new owners were soon to benefit tremendously from the bridge, but its construction had been requested earlier by area inhabitants.

### Petitioning the Bridge

Transportation to and from the area was important enough that Slippery Rock Township residents filed a petition in the Lawrence County Courthouse on 7 September 1874 indicating that a bridge was "much needed" over Slippery Rock Creek at Daniel Kennedy's Mill and that the cost of erecting said bridge would be "too heavy and burdensome" for the township's inhabitants to afford.<sup>15</sup> They requested that the judges of the county appoint viewers to inspect the site and see if the request should be granted. On the same day, the judges appointed Archibald McMillan, David Frew, and Jacob Shaffer to act as viewers. Each of the viewers lived within three to five miles west of the bridge site along the New Castle and Butler Road.<sup>16</sup>

On 15 September 1874, the viewers went to the site and returned with a unanimous decision that a bridge was "much needed" and reiterated the inhabitants' earlier concerns about cost. They determined that a new bridge, 90'-0" between abutments, should be erected with county funds on the site of the old bridge. They also determined that the new abutments should be 17'-0" high and be placed "immediately" in front of the old abutments. The court approved the viewers' recommendation on 15 December 1874, and construction began shortly thereafter.

The petitioners then selected the firm of Bell and Breckenridge to provide the work for the abutments and entered into a contract with J. B. White and Sons for the superstructure. Bell and Breckenridge were paid \$4.60 per peck of twenty-five cubic feet, and J. B. White and Sons were paid \$19.75 per linear foot.<sup>17</sup>

On 27 May 1875, the petitioners asked the court to appoint "proper persons" to inspect the finished bridge and make a report to the court, noting that the "said bridge is now completed." The court selected Robert Francis, Samuel Kildoo, and Joseph Mehard as viewers. It was around this time, in May 1875, that Mehard, Oliver, and Graham sold their interest in the mill to McConnell, Wilson, and Company.<sup>18</sup>

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<sup>14</sup> Aaron L. Hazen, *The Twentieth Century History of New Castle and Lawrence County, PA* (Chicago: Richmond-Arnold Publishing Co., 1908), 333.

<sup>15</sup> Lawrence County, *Road Docket*, 3:253 (Sep. 1874).

<sup>16</sup> *Atlas of the County of Lawrence in the State of Pennsylvania* (Philadelphia: G. M. Hopkins & Co., 1872; reprint, New Castle, Pa.: Shenango Street Station, Inc., 1982), 43.

<sup>17</sup> Lawrence County, *Road Docket*, 3:304 (May 1875).

<sup>18</sup> In 1879, Samuel Wilson sold his share of the interest to James F. and Thomas McConnell. The McConnells updated the mill machinery, replacing the water wheel with turbines and the flat grinding stones with



By 25 October 1875, it was noted in the court records that the viewers had not yet inspected the bridge. On 13 November 1875, however, the viewers reported to the court that the masonry and superstructure were completed according to specifications. The bridge was probably completed, however, in the first half of 1875.

### Bridge Details

As finished, the 90'-0"-long "Bridge at Kennedy's Mill," as it was referred to in court records, featured a Howe truss based upon a variation of the 1846 patent with pairs of wrought-iron vertical rods extending from the counterpoint of the diagonals.<sup>19</sup> Each panel contains two 6" by 7" diagonals leaning toward midspan, and one diagonal leaning away, bolted together where they cross. The diagonal members have square ends that rest on wooden impost blocks, and are held in place by tension in the vertical rods. Metal plates at each end of the rods help distribute forces to the top and bottom chords. The bridge's floor system sits atop the bottom chords.

The top chords are comprised of three wooden beams running longitudinally and bolted together at intervals. In turn, these support the gabled roof which consists of rafters supporting the longitudinal wooden roof planks. A horizontal Howe truss, in the plane of the top chord, forms the lateral sway bracing. Here, cast-iron impost blocks receive the ends of the diagonal members. The vertical clearance between this truss and the wooden deck is 12'-7". The roof is protected by asphalt paper tacked into the wooden roof planks.

The 14'-0"-wide wooden deck consists of 2"-thick transverse planks of varying widths crossed by plank runners on either side. Where the decking meets the truss, a 6" x 6" wheel guard runs the length of the bridge. The end posts on each end of the bridge are comprised of three wooden beams side by side, separated by two vertical wrought-iron rods. The bridge has an underclearance of 20'-6" at mid-span. The 14'-0"-wide approaches curve sharply onto the bridge on both ends.

As was common with the covered bridges of western Pennsylvania, McConnell's Mill Bridge features vertical board-and-batten siding. The siding covers both sides, except for a 1'-0"-high "window" under the top chords, permitting some light to enter the otherwise dark interior. The board-and-batten siding also wraps around a few feet onto either end of the bridge, covering the vertical end posts and gables. This portion of the board-and-batten rests on the masonry abutments, where rough-cut stones jut out from under and around it.

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rolling mills. During this period the mill was known as "Forest Mills." James F. McConnell later sold his interest in the company to his nephew James and Thomas McConnell's son. It was then operated under the name "T. McConnell and Son." The mill eventually closed in 1928, after it was inherited by Thomas Hartman, grandson of Thomas McConnell. Hartman sold the mill in 1946 to the Western Pennsylvania Conservancy, which later deeded the property to the state of Pennsylvania.

<sup>19</sup> The 90'-0" measurement is given in the 1875 Lawrence County road docket. State bridge inspection reports from the early 1990s give a 91'-0" length to the span. The bridge measures 96'-5" between centerlines of end posts and 109'-5" from outside face to outside face of siding.

The original deck support, however, is no longer in place. In the late 1950s, the state replaced the decaying wooden floor system, except for the bottom chords. A new steel floor system replaced the original wooden stringers, wooden floor beams, and wooden sway bracing. The state added supplemental steel girders — large wide-flange I-beams — beneath the bottom chord on either side. A new wooden deck was also added during this rehabilitation, and around this time the original roof covering was replaced with a green asphalt roll roofing. It may have also been around this time that the bridge's board-and-batten siding was painted red; it had previously been white. This rehabilitation occurred sometime after 5 October 1957, when the bridge and the mill together became a part of McConnell's Mill State Park. The mill and the dam were reconstructed in 1963, and the mill is now a museum.

Underneath the eastern edge of the bridge are rectangular grooves in a line chiseled out of some of the creek's rocks, suggesting that a trestle bent may have supported the previous bridge on this site. Under the western edge are eight square holes in a roughly semicircular slab of stone below the western abutment. These holes and the semicircular rock are plainly visible in a sketch of the bridge and the mill drawn by R. Caughey of "Forest Mills, McConnell, Wilson, & Co., Proprietors" between 1875 and 1879.<sup>20</sup> The holes may have supported part of the previous bridge at the site, although documented explanation of these holes or the rectangular grooves on the opposite side has yet been discovered.

In 1978, a bridge inspection undertaken by Frank B. Taylor Engineering Company of New Castle, Pennsylvania, reported the bridge in good condition overall, recommending only that bridge inspections be stepped up to every two years and that signage indicating a weight limit of five tons and a clearance of 10'-0" be posted. The study also noted that the bridge was covered in graffiti.<sup>21</sup> Another study by the same company in 1995 recommended replacement of the wooden decking and other rotted wooden components, replacement of the roof, and a thorough re-painting. Unless one climbs under the bridge, only the steel I-beams, currently painted blue, are visible from the exterior.

These repairs are the only major alterations to the bridge. The added steel has kept the bridge working under heavier loads; the Howe truss performs considerably less of the support work than it did in the past. Yet the truss is largely intact, a reminder of nineteenth-century technology. Carved into the diagonal members and the interior of the board-and-batten exterior are years of graffiti, dating as far back as 1905, and probably earlier.<sup>22</sup>

As of this writing, however, the fate of the McConnell's Mill Bridge is uncertain. Drivers speed their vehicles fearlessly across the one-lane bridge throughout the day, despite the tremendous clatter made by the loose and split deck planks as the vehicles pass over them. There

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<sup>20</sup> Sketch reproduced in *Atlas of the County of Lawrence*, 117.

<sup>21</sup> In 1997, a three-ton weight limit sign was posted outside the bridge.

<sup>22</sup> Suzanne McGilvray, the great, great grand-daughter of Daniel Kennedy, points out that descendants of the Kennedys carved their initials into the bridge. Thus, some of the graffiti could — and probably does — date back to the nineteenth century. Suzanne McGilvray, to author, 17 Aug. 1997.

are holes in the roof, and a 4'-0" section of one of the diagonals toward the bridge's southwest corner has been broken off.

While it is now difficult to imagine the bridge's former role providing access from McConnell's grist mill to points in Lawrence County, the clearly expressed Howe truss reminds us about the development of nineteenth-century American bridge engineering. But over the years, the McConnell's Mill Bridge has become more than a simple work of engineering. In its beautiful setting within a state park, the bridge lends credence to the long-standing American fascination with covered bridges.

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#### **APPENDIX: Suggestions for Further Research**

Some questions concerning the McConnell's Mill Bridge arose during the research and writing of this report. Some of these questions, due to limitations in the scope of the Pennsylvania Historic Bridges Recording Project - I, remain unanswered. It is suggested that scholars interested in this bridge consider pursuing the following:

1. Did the contractors also design the bridge?
2. What exactly is the reason for the grooves chiseled in the rocks below the bridge?
3. Why were so few Howe truss covered bridges built in Pennsylvania?